

**ABSTRACT**

A method and apparatus for synchronizing in the receiver of an orthogonal frequency division multiplexing (OFDM) wireless communication system, and in particular a multiple input multiple output (MIMO) OFDM system. The OFDM transmitter inserts training symbols  
5 into the transmission signals, and when the transmission is received a frequency synchronization module develops from them a weighted representation of the received signal from which frequency offset estimates for use in frequency offset compensation may be made.